

and 9% of multipara have been repaired. It is a curious corollary that in the out clinic department, where patients are mostly confined by students, only 8% of primipara and 8% of multipara were judged to need a perineorrhaphy. The inference would seem to be that the less experience one has the better are the results, but the fact is that with an increased experience in examining the pelvic floor post partum, the more one will find to repair.

This paper is a plea to give the often maltreated obstetrical patient the same study and consideration that is shown the more interesting medical and surgical patient. Obstetrics calls for much that is unrewarded and credits much that is undeserved, but in the long run it pays to consider most seriously the young primipara and to give to her and to her prospective baby the careful attention and conscientious practice that can only be obtained by a universal routine systematic ante partum and post partum examination.

RAILWAY SURGEON

THE EIGHTH ANNUAL MEETING OF
THE PACIFIC ASSOCIATION OF RAIL-
WAY SURGEONS, SAN FRANCISCO,
CAL., AUGUST 26TH AND 27TH, 1910.

Minutes.

Meeting called to order at 2:30 p. m., President Kurtz in the chair.

Address of the President: "Tendon Transplantation."

It was moved and seconded that the reading of the minutes be dispensed with. Carried.

Following applications for membership were read:

G. J. Bergener, San Francisco; G. W. Stout, Ukiah; A. M. Thomson, Sonoma; A. R. Graham, Tomales; F. R. Horel, Arcata; E. L. Cottrell, Scotia; F. E. Sohler, Geysersville; E. J. Ruddock, Guerneville; C. C. Cottrell, Scotia; S. L. Reu, Ukiah; U. V. Stone, Healdsburg; F. E. Raynes, Duncans Mills; S. P. Cavanagh, Pt. Reyes; R. B. Williams, Sausalito; G. S. Loveren, Fortuna; H. S. Gorrage, Petaluma; J. W. Jesse, Santa Rosa; S. Mizell, Toledo, Mex.; W. P. Murray, Caliente, Nev.; C. E. Sandler, Imperial; H. W. Gibbons, San Francisco; H. T. Rooney, Colfax; C. L. Howell, San Francisco; L. D. Green, San Francisco; P. J. Mangan, Winnemucca, Nev.; H. Abraham, San Francisco; W. L. Blodgett, Willits.

It was moved and seconded that the Secretary cast the ballot. Secretary cast ballot and the applicants were duly elected to membership.

Scientific program was proceeded with according to program.

The Secretary read invitation from the Los Angeles County Medical Society, inviting us to hold our 1911 meeting at Los Angeles.

Motion was made and seconded that the ninth annual meeting be held in Los Angeles on the day preceding the opening of the meeting of the American Medical Association. Carried.

ELECTION OF OFFICERS.

Nominations for President. Dr. Taylor nominated Dr. O. D. Hamlin, Oakland; nomination seconded. It was moved and seconded that the nominations be closed and the Secretary cast ballot. So ordered.

Secretary cast the ballot and Dr. Hamlin was duly elected President.

Nominations for First Vice-President. Dr. McCleave nominated Dr. W. I. Terry, San Francisco; nomination seconded. It was moved and seconded that nominations be closed and the Secretary cast the ballot. So ordered.

Secretary cast the ballot and Dr. Terry was duly elected First Vice-President.

Nominations for Second Vice-President. Dr. Coffey nominated R. T. Legge, McCloud; nomination seconded. It was moved and seconded that nominations be closed and the Secretary cast the ballot. So ordered.

Secretary cast the ballot and Dr. Legge was duly elected Second Vice-President.

Nominations for Treasurer. Dr. Huntington nominated Dr. E. M. Keys, incumbent; nomination seconded. Moved and seconded that nominations be closed and the Secretary cast the ballot. So ordered.

Nominations for Secretary. Dr. Reardan nominated Dr. George R. Carson, incumbent; nomination seconded. Moved and seconded that nominations be closed and the Secretary cast the ballot. So ordered.

Nominations for Executive Board—one vacancy to succeed Dr. Morton, whose term expires. Dr. McCleave nominated Dr. S. E. Pinniger, Tracy; nomination seconded. Moved and seconded that the Secretary cast the ballot. So ordered.

Motion was duly made and seconded that proceedings be published in the CALIFORNIA STATE JOURNAL OF MEDICINE and that the Secretary confer with the editor of the JOURNAL, arranging with him that copies of transactions be sent to all members who do not now receive the JOURNAL, at the expense of the Association.

A vote of thanks was tendered the retiring President.

Adjourned to meet in Los Angeles in 1911.

PRESIDENT'S ADDRESS. TENDON TRANSPLANTATION.*

By CARL KURTZ, M. D., Los Angeles.

I take this opportunity to express to you my sincere appreciation of the honor you conferred upon me at your last annual meeting. Coming unexpectedly as it did I feel more than complimented that you should have chosen me your presiding officer. I desire also to express my thanks to our proficient Secretary for his untiring efforts in arranging this excellent program.

I have attended the meetings of this organization for a number of years and have been exceedingly

* Read before the Eighth Annual Meeting of the Pacific Association of Railway Surgeons, August 26th and 27th, 1910.

interested in the papers and in the discussions by its members.

It has been my pleasure to see this Association grow from a small group of men into a strong organization whose actions and deliberations can do much toward advancing the science of medicine and surgery in this state. As the representative body of Railway Surgeons of the Pacific Coast it will no doubt continue to increase in membership and in influence.

The subject which I have chosen for my address is one in which I have been interested for a number of years.

Tendon transplantation is one of the most satisfactory procedures in operative surgery. I know of no operation the results of which are more gratifying to the patient or to the surgeon. When you consider that the destruction of certain groups of muscles and tendons give rise to conditions which may cripple the individual for life, you must realize the importance of an operation which will correct deformity and restore functional power to the afflicted parts.

Although Nicoladoni has been given the credit of having first performed this operation in 1881 we find that a tendon transference had been made by Tillaux as early as 1869 and by Duplay in 1876. The early career of the operation was attended by many failures, and it is only within the last decade that the technique has been perfected and the operation brought into prominence by such skilled surgeons as Codivilla, Goldthwait, Hoffa, Lange, Vulpius and others. By tendon transplantation we understand the transference of the proximal end or portion of a healthy tendon to the distal extremity of a paralyzed muscle thereby transferring the muscular power to the affected area.

The indication for the operation is a partial or complete paralysis of a muscle or group of muscles, whose function can be restored by the power transmitted from healthy muscles lying in their immediate vicinity.

Peripheral paralysis the result of trauma is the most amenable to treatment.

Divided tendons, the result of stab wounds, gunshot wounds, or other injuries, frequently fail to unite by primary suture. The tendons retract, the muscles atrophy from non-use and fail to distribute their functional power. It is often impossible to locate the proximal extremities of these tendons, which are frequently imbedded in adhesions but the distal ends can be found and grafted on to some neighboring healthy muscle, again restoring the power to the paralyzed part.

The flexor muscles of the hand or foot may be destroyed by phlegmonous abscess. The destruction of the flexor sublimis or profundis digitorum will cripple the hand and render it useless for the purpose of manual labor.

Injuries of the peripheral nerves frequently result in a permanent paralysis over the area of their distribution. In recent injuries of the nerves we should endeavor to bring the ends of the nerve together with suture. This is often impossible and

when it is possible the nerve frequently fails to unite, destroying the functional power of the muscles which it supplies. The radial, the ulnar, the median or the musculo-spiral may be severed by a stab wound or gunshot wound or they may be torn by complicated fractures making repair impossible and resulting in the characteristic distortions. Perhaps the most gratifying results are obtained in those cases of paralytic club foot, the result of anterior poliomyelitis. I say gratifying, for in many of those unfortunate cripples the functional activity of the paralyzed muscles can be sufficiently restored to enable them to use their extremities without the aid of crutches or other apparatus.

In order to be successful in our operative work we must be familiar with the actions and functions of the various muscles. We must determine absolutely by electrical stimulation or otherwise, which muscles are paralyzed and which muscles have wholly or partially retained their functional power.

As regards the preparation of the field of operation, I want to emphasize the fact that absolute asepsis is most important. As much care should be taken in opening the tendon sheaths as is taken in opening the peritoneal cavity. Suppuration will prevent union of the tendons and destroy the usefulness of the plastic.

Long continued paralysis of a muscle or group of muscles is always attended by more or less distortion due to an overbalancing of the healthy muscles at the expense of the weaker ones. The object of the operation, therefore, is not only to supply functional power to the paralyzed muscles, but to correct the deformity. Correction of the deformity should always precede tendon transplantation. In the severe cases tenotomy and redressment should be made at least one month prior to the operation.

When should we operate? Not until the stationary stage is reached. According to Vulpius not earlier than six to nine months after the onset of the disease and then only when all efforts to restore the functional power to the paralytic area with massage and electricity have failed. As regards the age, there is no limit. I have operated a case of paralytic club feet in a woman 52 years of age and have had a fairly good result.

The best results are obtained in children past the age of four.

In performing a tendon transference, it is always best when possible to select muscles of the same group and running in the same direction. However, there are times when antagonistic muscles can be used to good advantage.

The incision should be made directly over and parallel to the affected tendons. Paralyzed muscles are easily recognized by their atrophy and dull gray color. After opening the tendon sheath, the tendon is divided or split near its insertion and transferred to the paralytic one, to which it is attached with fine silk sutures. Various combinations of tendon transference are recommended. The simplest method is a lateral anastomosis between two neighboring tendons.

A healthy muscle of little functional use can be

sacrificed to supply important muscles whose function has been destroyed. For example the replacement of the tibialis anticus by the extensor hallucis.

When the power is to be supplied from a muscle of great importance then it is best to take a portion of it and graft it on to the paralyzed one, or, the paralytic tendon can be divided and attached to the healthy muscle.

Should a muscle still retain some of its function then it would be better to take a flap from the paralytic as well as the healthy tendon and stitch them together.

Owing to many failures that were met with in the treatment of paralytic club foot Lange suggested that the extremity of the healthy tendon be attached to the periosteum in order to give it a firmer fixation. Should the tendon prove to be too short it can be lengthened with strands of silk. These silk strands are in time imbedded in fibrous tissue, thus practically forming a new tendon. This same method can be employed in bridging over a defect or filling in a space between the retracted ends of divided tendons. After the transplantation the tendon sheaths are carefully closed with fine silk and the operation completed in the usual manner. The limb is placed in an overcorrected position and immobilized with a plaster of paris dressing for a period of from four to eight weeks. The after treatment is very important. It consists in supporting the limb and in improving its nourishment with hot baths, massage and electricity. This should be kept up for at least six months. From the character of the distortion we should determine which muscles are paralyzed and from which source the muscular power is to be derived.

To illustrate: When the anterior tibial nerve is injured we get paralysis of the tibialis anticus, the ext. longus digitorum and the ext. proprius pollicis muscles. To correct the condition we should divide the tendon of the peroneus longus, sew the stump to the peroneus brevis and attach the proximal end of the tendon to the tibialis anticus. A flap is now taken out of the tendo Achillis passed under the peroneus and stitched to the ext. longus digitorum. The ext. proprius pollicis is attached to the tibialis anticus.

The musculo spiral nerve may be irreparably torn in fractures of the humerus causing paralysis over the area of its distribution. The hand is pronated, and the hand and fingers flexed. The condition is commonly known as wrist drop. The crippled hand can be restored in the following manner: Shorten the ext. carpi ulnaris. Separate the flexor carpi ulnaris from the os pisiform, pass it under the tendon of the ext. carpi ulnaris and attach it to the ext. communis digitorum above the bifurcation. The results in these cases is often wonderful.

Tendon transplantation is the ideal operation for paralytic club foot. The method of operating varies according to the number of muscles involved and the amount of functional power that can be transferred. The greater the number of muscles paralyzed the more complicated will be the operation. The character and the degree of deformity is dependent entirely upon the location of the paralytic

muscles and the degree of muscular power that has been destroyed.

When there is a partial or complete paralysis of the anterior group of muscles, the foot drops, the unopposed tendo Achillis contracts and the foot assumes a position of pes. equinus. Should the adductors be involved then the foot is converted into a pes. equino varus by the action of the adductors. When the posterior group of muscles are paralyzed the opposing anterior group will convert the foot into a pes. calcaneus.

Pes. valgus is the result of a paralysis of the tibialis anticus.

Time will not permit me to enter into a detailed description of the various transplantations recommended for talipes. Suffice it to say that the muscles whose functions are partly or wholly destroyed must be replaced by healthy muscles. It remains, therefore, for the surgeon to select such muscles which in his judgment can convey the most power to the paralytic group and correct the deformity.

In conclusion I wish to report a number of cases which were operated at the German Hospital by Dr. Joseph Kurtz and myself. Our results have been most satisfactory.

Case 1. Fred H., age 13. Severe laceration of the anterior surface of the arm just above the wrist. The wound was treated by a neighboring physician but he evidently forgot to suture the divided tendons. Some time after the injury it was noticed that the boy had a paralysis of the flexor muscles of the hand. A long incision was made parallel to the palmaris longus. I found that the flexor carpi radialis, the palmaris longus and the flexor sublimis digitorum had been divided. The proximal ends of the flexor carpi radialis and palmaris longus were located and stitched to their distal extremities. The proximal ends of the flexor sublimis digitorum could not be found. The distal ends were attached to the flexor carpi radialis to the flexor carpi ulnaris and to the flexor profundus digitorum. The patient made a good recovery, he has a useful hand to-day.

Case 2. William S., telegraph operator. Injury of the right middle finger resulting in a contracted cicatrix with acute flexion and ankylosis of the middle joint which greatly interfered with his work. The flexor profundus digitorum was divided and its proximal end attached to the lumbricales. There was not enough skin left to cover the wound leaving the tendons bare. This was covered by a Thiersch implantation. Result excellent.

Case 3. Nora H., age 22. Severe pes. equino valgus, the result of anterior poliomyelitis in the second year. June 2, 1906, tendo Achillis divided, the foot redressed and placed in over-corrected position and immobilized with plaster of paris dressing.

June 29, peroneus longus and one-half tendo Achillis attracted to tibialis posticus. Ext. hallucis and one-half of the extensor longus digitorum grafted upon the tibialis anticus. Plaster of paris dressing removed one month later. Result good. At present time the foot is normal in all its movements.

Case 4. Mrs. A., age 52. Paralytic equino varus in both feet. December 2, 1907, tendo Achillis divided, feet forcibly corrected with much difficulty and immobilized with plaster of paris dressing for one month.

Operation tendo Achillis split and grafted on to the peroneus longus and brevis. The ext. hallucis divided and its proximal extremity attached to the

extensor longus digitorum. The woman who had used crutches all her life now walks upon the soles of both feet without the aid of apparatus. Her gait is not graceful for she has an ankylosis in both tarsi.

Case 5. Henry A., age 7. Paralytic equino varus, result of anterior poliomyelitis in the second year. June 11, 1908, division of tendo Achillis, redressment and fixation in plaster of paris for one month. Ext. hallucis and one-half of tibialis anticus attached to the shortened ext. longus digitorum. One-half of tendo Achillis grafted on peroneus longus and brevis. Plaster of paris dressing removed in four weeks; result good.

Case 6. Miss W., age 22. Paralytic equino varus. Tenotomy, forcible correction and immobilization with plaster of paris dressing for one month. Operation ext. hallucis transplanted on to the extensor longus digitorum. Tibialis anticus split and one-half grafted in the ext. longus digitorum. Stump of ext. hallucis attached to tibialis anticus. Tendo Achillis split and attached to peroneus longus and brevis. Excellent result.

Case 7. Fred Z., age 15. Paralytic equino varus. Varus very marked. Wedge removed from the middle of the tarsus. Tendo Achillis lengthened by oblique cut. One-half of tendo Achillis grafted on the tendons of the peronei. Result good.

Case 8. Age 7, paralytic equino varus. Tenotomy, redressment, and fixation with plaster of paris for one month. Operation, one-half of tendo Achillis transplanted into the tendons of the peronei. Result good.

STRANGULATED HERNIA.*

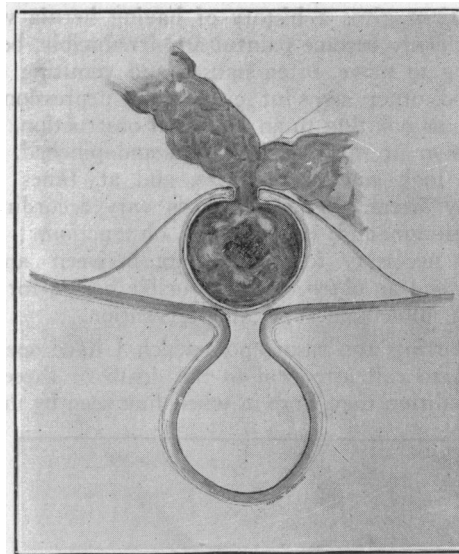
By A. MILES TAYLOR, M. D., San Francisco.

I have selected for my subject, Strangulated Hernia, its frequency among railroad men and the necessity of early operation in all forms of hernia. My object in bringing this most common subject before you to-day is to awake interest in one of the most neglected of all conditions demanding immediate surgical intervention. If herniae, both large and small, were diagnosed early and corrected through an operation, we would not be called upon so frequently at most any hour of the day or night to deal with this, one of the most grave conditions in surgery and one that few doctors in general practice have not had experience with.

Herniae of the abdominal viscera may be internal or external. Internal—where the displacement is into another cavity through some opening in the mesentery or omentum or adhesion. External—protrusion through the abdominal wall of the sac and its contents. The predisposing causes are imperfect closure of the umbilicus and inguinal and crural canals, weakened state of the mesentery and accumulations of fat in the peritoneum. The most frequent exciting cause is strain.

We have various forms of hernia, namely, inguinal, direct, and oblique; femoral, umbilical, obturator, sciatic, lumbar, bladder, retroperitoneal, diaphragmatic, epigastric, etc., but the one we meet most frequently is the oblique inguinal and the principal one I have taken up.

Before going any further, I wish to briefly refresh your memory with regard to the anatomy of the part, and the structures we must deal with.



Strangulated direct inguinal hernia, reduced en masse.

The first covering is the skin, the fascia with fat, aponeurosis of the external oblique muscle, which is attached to the symphysis pubis by one portion and reflected by the other from the anterior superior spine of the ilium to the spine of the os pubis, forming Poupart's ligament, being reinforced at the point of the external ring by the intercolumnar fibres. Underneath this, over the cord is the cremaster muscle. Below this fascia we find the spermatic cord consisting of the vas deferens, arteries, veins, nerves and lymphatic vessels. On the inner side we find the conjoined tendon formed by the internal oblique and transversalis aponeurosis and the peritoneum. The deep epigastric artery runs upward and inward from the external iliac to the center of the rectus abdominus muscle, passing vertically between the two rings lying between the transversalis fascia and the peritoneum, and must be avoided in operating. The more common forms of hernia descend externally to this vessel.

In giving these parts a few moments of study we can readily see how the different forms of hernia are formed and with what ease this condition can be corrected surgically. One can easily understand how in days of preaseptic surgery this condition was neglected, but under our present method of aseptic surgery there is no excuse for neglect. We must lay aside those old notions our predecessors had and methods they employed, namely taxis, truss, etc., sometimes reducing the strangulated portion en masse, and the poor patient dying of the gangrenous obstructed or ruptured bowel.

I wish to state before I go any further that this is an emergency condition and the only appropriate treatment is a surgical one. Our chief source of danger is septic absorption, and in order to avoid this the condition should be properly dealt with before the incarcerated bowel has ceased to be viable. Very frequently the patient is not brought to us until after repeated efforts at reduction; a long wait with his powers of resistance almost gone, not due to the gangrenous condition, but to sepsis.

* Read at the Eighth Annual Meeting of the Pacific Association of Railway Surgeons, San Francisco, Aug., 1910.